

**A Method for Manufacturing Silicate Waveguide Compositions For
Extended L-Band and S-Band Amplification**

ABSTRACT

5 A method of making an erbium-doped optical fiber for use in optical
amplifiers according to the present invention includes the step of providing a substrate
tube. High purity silica-based cladding layers are deposited on the inside of the tube.
A core glass that includes silica, Al, a non-fluorescent rare-earth ion, Ge, Er, and Tm
is then deposited in the tube. The non-fluorescent rare-earth ion may be La and the
10 core may further include F. The tube is then collapsed to form a preform. Finally, the
preform is drawn to yield optical fiber.

15 The core glass may be substantially homogeneous. The core may include at
least two regions, wherein one region contains a substantially different Er to Tm ratio
than the other region. Said regions may be in an annular arrangement. The core of
such a waveguide may be made with multiple MCVD passes, multiple sol-gel passes
or with multiple soot deposition, solution doping, and consolidation passes.